

IN THE CLAIMS

1. (currently amended) An interface circuit, comprising:

at least one microprocessor operable to perform one or more functions, said microprocessor including at least a time input terminal for receiving a time reference signal and a signal input terminal for receiving an input signal ~~within~~ having a detectable microprocessor logic operating level;

at least one RS232 receiver having an input for receiving an alternating current (AC) AC voltage input signal and an output for transmitting a microprocessor logic operating voltage signal based on the AC voltage input signal, the output of said at least one RS232 receiver being coupled to said signal input terminal of said at least one microprocessor such that said microprocessor is operable to detect a change of state in said AC voltage input signal; and

at least one time reference RS232 receiver having an input for receiving a constant time reference AC voltage signal and an output for transmitting ~~a—the time reference voltage—signal,~~ based on the constant time reference AC voltage signal, to said time input terminal of said at least one microprocessor.

2. (currently amended) The interface circuit of claim 1, further comprising a voltage divider coupled to said at least one time reference RS232 receiver to reduce a—the incoming operational—voltage of said constant time reference AC voltage signal to within a detectable range.

3. (currently amended) The interface circuit of claim 1, further comprising a voltage divider coupled to said at least one RS232 receiver to reduce a—the incoming operational

voltage of said constant time reference AC voltage signal to within a detectable range.

4. (currently amended) The interface circuit of claim 1, ~~wherein the falling edge of the time reference signal is capable of interrupting said at least one microprocessor is~~ operable to be interrupted at a falling edge of the time reference signal.

5. (currently amended) The interface circuit of claim 4, ~~wherein during interruption of said at least one microprocessor, a reading is taken at the input of said at least one RS232 receiver to determine if an external controller has been activated~~ further comprising a circuit operable to take a reading in response to said microprocessor being interrupted by said falling edge of said time reference signal.

6. (currently amended) The interface circuit of claim 2, wherein said voltage divider is arranged such that said ~~incoming operational voltage of said constant time reference AC voltage signal~~ is between about zero to five volts.

7. (currently amended) The interface circuit of claim 2, wherein said voltage divider comprises a pair of resistors having predetermined values such that said ~~incoming operational voltage of said constant time reference AC voltage signal~~ is between about 0.5 to 2.7 volts.

8. (currently amended) The interface circuit of claim 2, ~~further comprising wherein said output of said RS232 receiver is operable to switch to a logic high output when said input signal exceeds~~ an input logic high threshold voltage and

to switch to a logic low output when said input signal falls below ~~and an~~ input logic low threshold voltage.

9. (currently amended) The interface circuit of claim 8, further comprising a voltage divider coupled to said input of said RS232 receiver, wherein ~~said~~ resistor values of said voltage divider are set such that said ~~incoming operational~~ input logic high threshold voltage is between about 1.3 to 2.7 volts and said input logic low threshold voltage is between about 0.5 to 1.9 volts.

10. (currently amended) The interface circuit of claim 8, wherein ~~said~~ resistor values of said voltage divider coupled to said input of said RS232 receiver are set such that said ~~incoming operational~~ input logic high threshold voltage is about 2.1 volts.

11. (currently amended) The interface circuit of claim 8, wherein ~~said~~ resistor values of said voltage divider coupled to said input of said RS232 receiver are set such that said ~~incoming operational~~ input logic low threshold voltage is about 1.1 volts.

12. (currently amended) The interface circuit of claim 1, ~~further comprising~~ wherein said RS232 receiver is a first RS232 receiver, said interface circuit further comprising a plurality of at least twelve RS232 receivers, numbered a second RS232 receiver through a twelfth RS232 receiver, each of said second through twelfth RS232 receivers having an input for receiving an AC voltage input signal and an output for transmitting a microprocessor logic operating voltage signal to a respective signal input terminal of said at least one microprocessor.

13. (currently amended) The interface circuit of claim 1, wherein said input ~~the output signal~~ of said at least one RS232 receiver is coupled to at least one external controller.

14. (original) The interface circuit of claim 13, wherein said at least one external controller is selected from a group comprising a thermostat, a switch, a relay contact, and a humidity controller.

15. (original) The interface circuit of claim 1, further comprising a failsafe interface control circuit coupled between an output terminal of an external controller and said input of said at least one RS232 receiver, whereby said failsafe interface control circuit is capable of minimizing microprocessor malfunctioning.

16. (currently amended) A method for detecting a state of an alternating current (AC) ~~AC voltage input control~~ signal, comprising:

~~—providing an interface circuit including at least two RS232 receivers, each RS232 receiver being coupled to an input of a microprocessor;~~

~~—splitting a received input~~ applying an AC voltage control signal into a first and second signal, theas a first signal inputbeing coupled to a time reference circuit, including a first RS232 receiver said time reference circuit and applying the AC voltage control signal as a second signal input to a signal detection circuit including one of said at least two a second RS232 receiversreceiver, the second signal being coupled to at least one external controller circuit, said

~~external controller circuit including at least one of said at least two RS232 receivers;~~

obtaining a sampling time through detecting said the first signal at by the said time reference circuit output;

interrupting said the microprocessor in response to detecting the first signal; and

sampling the an output of the at least one external controllersignal detection circuit after a predetermined delay from after interrupting the microprocessor to determine a state of the AC voltage control signal.

17. (currently amended) The method of claim 16, ~~further comprising a plurality of external controller circuits.~~ wherein the AC voltage control signal is produced by any one of a plurality of external controllers.

18. (currently amended) The method of claim 16, ~~wherein, if a signal is detected during the sampling step, the method further comprises~~ comprising activating a controller circuit to perform a predetermined function when the AC voltage control signal is determined to have a first state.

19. (original) The method of claim 18, wherein the predetermined function comprises activating a load circuit.

20. (currently amended) The method of claim 18, wherein the step of activating a controller circuit comprises activation of at least one of a relay, a switch or a driver circuit.